

Claims

What is claimed is:

5 1. A tunable isolator comprising:

an isolator comprising an input port, an
output port and an isolation port;
a ferro-electric tunable component coupled to
the isolator;

10 a matching circuit coupled to the isolator
and comprising the ferro-electric tunable
component;

a control line operably coupled to the ferro-
electric component;

15 a control source electrically coupled to the
control line, the control source configured to
transmit a control signal on the control line;

wherein the ferro-electric component,
responsive to the control signal, adjusts the
20 impedance of the matching circuit.

2. The tunable isolator of claim 1, wherein the ferro-
electric tunable component comprises a ferro-electric
tunable capacitor.

3. The tunable isolator of claim 2, further comprising a substrate wherein the capacitor is directly mechanically coupled to the substrate and the isolator is directly mechanically coupled to the substrate.

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4. The tunable isolator of claim 1, wherein the matching circuit comprises:

an output matching circuit comprising a matching circuit chosen from a group consisting of
10 an isolator-to-diplexer matching circuit and an isolator-to-multiplexer matching circuit, wherein the output matching circuit is coupled to the output port of the isolator and to an input port of a device chosen from a group consisting of a diplexer and a multiplexer.
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5. The tunable isolator of claim 4, wherein the input matching circuit further comprises a second ferro-electric tunable component.

6. The tunable isolator of claim 5, wherein the second component comprises a tunable ferro-electric capacitor.
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7. The tunable isolator of claim 4, further comprising an input matching circuit comprising a power

amplifier-to-isolator matching circuit, wherein the input matching circuit is coupled to the output port of a power amplifier and to the input port of the isolator.

5 8. The tunable isolator of claim 1, wherein the matching circuit comprises:

an input matching circuit comprising a power amplifier-to-isolator matching circuit, wherein the input matching circuit is coupled to the output port of a power amplifier and to the input port of the isolator.

10 9. The tunable isolator of claim 8, wherein the output matching circuit further comprises a second ferro-electric tunable component.

15 10. The tunable isolator of claim 10, wherein the second component comprises a tunable ferro-electric capacitor.

11. The tunable isolator of claim 1, further comprising an isolation port matching circuit coupled between an electrical ground and the isolation port 20 wherein the isolation port matching circuit comprises a second ferro-electric tunable component.

12. The tunable isolator of claim 11, wherein the second tunable component comprises a ferro-electric tunable capacitor.

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